400/662/004
1943
663
DISTRICT AGRICULTURIST
CLARESHOLM, ALBERTA
933

Extension Bulletin No. 115

UNIVERSITY OF SASKATCHEWAN
COLLEGE OF AGRICULTURE

LIBRARY, ALBERTA AGRICULTURE
9718 - 107 STREET, EDMONTON
ALBERTA, CANADA T5K 2C8

Some Common Diseases of Horses and Cattle in Saskatchewan

Contributed by
DEPARTMENT OF VETERINARY SCIENCE

SASKATOON, SASKATCHEWAN

Some Common Diseases of Horses and Cattle in Saskatchewan

By NORMAN WRIGHT

THE FOLLOWING instructions and recommendations are intended chiefly for the prevention of disease, and as a guide to first-aid treatment. When a qualified veterinary surgeon is available owners are advised to call him whenever feasible.

HORSES

NON-INFECTIOUS DISEASES

Of the non-infectious diseases of horses, the following are common in Saskatchewan when management is faulty.

Colics.—There are many conditions included under this term. For practical purposes they may be divided into these categories: Acute Indigestion, Flatulent Colic, Spasmodic Colic, Impactions.

Acute Indigestion.—This is a condition in which there is an excessive formation of gas in the stomach. It is always serious and often fatal due to rupture of the stomach. When we consider that the horse cannot vomit (the inlet closes after the food is swallowed and the outlet is closed by the rapid formation of gas)—the seriousness of the condition can be realized.

The causes are, overfeeding of grain; too much cold water; working too soon after a heavy feed; moldy feed, either grain or fodder; sudden changes of feed, especially to green feed, oats or pasture. Briefly, the symptoms are: colicky pains, attempts to vomit, distension of the body about the middle over the curve of the ribs, great distress and suffering, and short, rapid breathing. The normal rumble of the bowels is suppressed or entirely absent.

In the treatment of this condition the quickest and surest way is to use a stomach tube and let the gas out. The tube and the skill to pass it not being available, the next best treatment is medicinal. Mix:

Turpentine.....2 tablespoonfuls
Creolin.....2 to 4 teaspoonfuls
Raw linseed oil or mineral oil.....1 pint

well shaken up and given in one dose as a drench.

Do not use **boiled** linseed oil as it is poisonous.

Baking soda (sodium bicarbonate) in two to four tablespoonful doses is often given by farmers. It will give relief if the stomach is not acid and not too tightly distended, but if it is, the remedy increases the pressure by effervescence. Sometimes an acid stomach can be recognized by a sour odor from the breath.

It is not possible to "tap" the stomach of the horse.

Flatulent Colic.—The causes and symptoms of this condition are much the same as in acute indigestion, except that the distension is between the last rib and the point of the hip, mostly on the right side. The two diseases are often combined. The condition can be relieved by "tapping" the bowel with a trocar and cannula. The point to tap is an equal distance from the last rib, the point of the hip bone and the side projections of the back-bone, on the right side. The instrument should be sterilized by boiling, the skin shaved and swabbed with alcohol or tincture of iodine. The direction of the puncture should be downwards, forwards and inwards deep into the bowel. The core of the instrument is then removed and the gas rushes out.

"Tapping" in the horse should be attempted only where the tension is great and professional help not available. It should never be done by "stabbing" with a knife.

The medicine recommended for acute indigestion is indicated in this condition also.

Horses suffering from either of these forms of "bloating" should not be allowed to throw themselves violently on the ground as it sometimes ruptures the stomach or bowel, which means death.

Spasmodic Colic.—This condition, also caused by faulty feeding and watering and by severe fatigue, is of a spasmodic nature. The colicky pains are intermittent, often violent. Between spasms the horse may eat and appear normal. Uncomplicated, it is the least serious of the colics. Treatment consists of giving physics and antispasmodics. As a physic, an aloetic physic ball (which can be purchased at the drug store ready made) or 1½ pints of raw linseed oil or 1 pint of mineral oil may be given. As an antispasmodic, 1 to 3 ounces of sweet spirits of nitre may be given. The horse should not be allowed to eat between spasms. A physic ball can be given by hand but an inexperienced person should use a balling gun or a mouth speculum.

Impactions.—These accumulations of waste food material may occur at any place in the digestive system but commonly occur in the large intestine at the constricted curve below and in front of the rectum. They are caused by long continued feeding of dry feed and not sufficient water and occur in Saskatchewan more often in late winter and early spring, amongst horses that have been running at straw piles all winter and eating snow for water. Overfeeding will also cause them. The symptoms are: mild colicky pains, dullness, straining as though trying to urinate, constipation, often complete stoppage. The normal rumble of the bowels is suppressed or entirely absent. These symptoms may continue for days. The treatment consists of withholding all food, allowing plenty of water if the horse will drink it, and giving one pint of mineral oil or 1½ pints of raw linseed oil with one ounce of turpentine well shaken up in it, the first day, then half the dose twice a day after. The turpentine should not be continued for more than two days. As an added stimulant to the bowels, one teaspoonful of powdered nux vomica can be given three times a day. A rectal enema of warm soapy water stimulates the bowels and should be given daily. Walking exercise is helpful.

Diarrhoea.—Most stockmen consider this condition as a disease and often write in asking for advice and treatment. It is not a specific disease but a symptom of disease and is present in many and varied diseases, both infectious and non infectious. In dealing with the condition, the only intelligent thing to do is to find out the disease that it is the symptom of and apply suitable treatment for that disease. Treatment to stop the diarrhoea, even if successful, will not necessarily cure the disease. Stopping the diarrhoea suddenly is not always advisable.

Dysentery.—This is a condition in which there is blood in the stools and is often associated with diarrhoea. Like diarrhoea it is only a symptom of disease and should be considered from the same standpoint. Dysentery is usually a more serious symptom than diarrhoea. In some cases it is necessary to stop the diarrhoea or dysentery irrespective of what the disease causing it may be; for this purpose the following home remedies are useful. Wheat flour either scorched by placing in it the oven or given as a cooked flour gruel, one half to one pound three times a day. Starch mucilage, prepared as for laundering, containing four or five ounces of pure starch can be given three times a day. Powdered catechu in one to three teaspoonful doses, or prepared chalk in one to four tablespoonful doses, three times a day, are other useful remedies. These powders can be given with a spoon, well back on the tongue or mixed with the feed.

The two above paragraphs on Diarrhoea and Dysentery apply in the case of cattle as well as in horses. The remedies suggested can be increased by about one quarter for cattle.

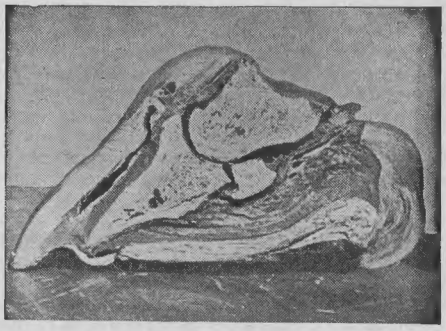
Fatal Bowel Diseases.—Under this heading are included knots, twists, telescoping of the bowels, ruptures of the stomach or bowel walls, and hernias which become strangulated. They are practically always fatal. Some of them occur from allowing the horse to throw himself violently on the ground during cases of colic. They cannot always be avoided, but if the horse suffering severe abdominal pain can be prevented from throwing himself around violently, fewer cases will occur.

Enteritis.—(Inflammation of the bowels). This condition is nearly always fatal in the horse. Most of the diseases of the digestive system that prove fatal, end up in enteritis. By prompt and suitable treatment, many cases of bowel trouble can be stopped before reaching this fatal condition.

Founder (*Laminitis*).—This condition occurs sporadically in the Province and is very common during threshing time when there is a lot of loose wheat lying around. It is an affection of the feet, usually the front ones. It is caused by overfeeding grain, especially wheat. Other causes are fast driving on hard roads, too much ice cold water when the horse is too hot. It sometimes follows after foaling or bowel troubles. The symptoms are: severe stiffness when walking or backing, the hind legs are brought as far forward as possible and the back is arched, often leading to the belief that there is something wrong with the kidneys, which is incorrect. There is quick breathing and a

full throbbing pulse. The temperature is raised three or four degrees and there are general symptoms of great pain. When the horse is forced to move he lifts his feet with a little jerk and puts them down again very gently. The hooves are usually hot and throbbing at the hoof heads. The best home treatment is to stand the affected feet in moisture, either by means of a tub, poultices, wet sacks or a mud standing up to the fetlocks. This should be done for several hours each day.

In applying moisture to the feet, the horse should not be allowed to stand in it continually as is often done. A moderate amount of moisture helps to reduce the pain and inflammation, too much favors separation of the insensitive structures (horny) from the sensitive (quick.) This condition has a tendency to occur in the nature of the disease and results in "dropped sole" and permanently deformed feet. Applying moisture continually, increases the liability to the development of this incurable deformity. A dose of physic is usually necessary. 1 ½ pints of raw linseed oil or 1 pint of mineral oil or an aloetic physic ball can be given. No known remedy has any direct influence on the diseased tissues, but one dessertspoonful of nitrate of potash three times a day helps indirectly. In a fat horse at the very start of the disease, the abstraction of two to four quarts of blood from the jugular vein is indicated. The writer does not approve of "bleeding" from the foot. If "bleeding" is to be done it should be done early in the disease, during the first 24 hours. All grain should be withheld but water should be given at frequent intervals. As soon as the acute pain has stopped the horse should be slowly exercised on soft, even ground. More careful handling of grain would prevent many cases of founder in Saskatchewan, with the aftermath of death and deformed feet. In cases that recover the feet are rarely as sound as before.



Cross section of a foundered foot, showing the damage done. Note the separation of the horny wall from the sensitive wall, due to the inflammation of the disease. When this occurs, the weight of the body forces the last bone of the leg, like a chisel, through the sole in front of the point of the frog. In cases that recover, this separation heals but the hoof is deformed. To detect a foot that has been foundered, look for a depression in front on the wall above where the separation has healed, also a rounded prominence on the sole, in front of the point of the frog.

Azoturia.—This disease is known amongst horsemen as "Blackwater," the correct name being Hemoglobinuria. It is fairly common in Saskatchewan and is a very serious disease, often proving fatal but can definitely be prevented in most cases. The cause is overfeeding and lack of exercise. It usually occurs in a horse that is in good hard condition, well fed and cared for and working regularly. Then the horse is laid up for a few days, kept in the stable and fed the usual working ration of grain. After two or three days' rest, when the horse is put to work again, the disease is liable to develop. It does not often occur after a prolonged rest. Most cases occur under the above conditions after a few days rest. Cases rarely occur in a horse at pasture. The symptoms develop very quickly as a rule. On being taken out of the stable he goes lame in one hind leg, sometimes before he has gone very far, at other times he may have travelled a few miles. Along with the lameness there are signs of great pain, sweating, rapid breathing, a general appearance of distress; the affected leg seems unable to support the weight of the body. If he urinates the urine is coffee colored, hence the name blackwater. If he is forced to continue, the other leg becomes affected and he goes down, unable to get up on the hind quarters. In most cases the muscles over the loins and rump become swollen and solid feeling. At this stage the horse flounders around in a state of hysteria. The visible mucus membranes of the nostrils, eyelids, vagina, etc., are coffee colored. The pulse, temperature and respirations are all increased. When only one hind leg is involved the horse is usually able to get up but when he tries to put his weight on the affected leg it crumples under him. The front legs are very rarely affected. Both horses and mares are subject to the disease.

In the treatment of the disease, if a veterinary surgeon is available, call him as quickly as possible. If professional help cannot be obtained, the best home treatment is to get the horse into the nearest stable, unless the weather is warm enough to leave him in the open. The horse should not be walked even if he can walk. If he is down he should be moved on a stone boat or by other suitable means. If a large tent is avail-

able he can be treated where he is. A deep straw bed is necessary as the patient usually flounders around a lot and bed sores develop. There is no known medicine that is a specific, but a physic in the form of a physic ball helps, or one and a half pints of raw linseed oil or one pint of mineral oil. In addition, give the following medicines four to six times a day mixed together:

Soda-bicarbonate 1 to 4 ounces (baking soda)
Nitrate of Potash 2 to 4 drams (saltpetre)

Apply heat to the hard muscles—hot salt or sand, quilted in a sack and covered with a blanket. Where electric current is available an electric iron is excellent to massage the affected muscles with, taking care not to burn the skin. A mustard plaster, applied from the middle of the back to the tail, for four inches on each side of the spine and over the hard muscles, covered with paper and then a blanket, can be used instead of heat. The horse should not be allowed to lie on the same side for more than six hours a day. Slinging the horse, if only one leg is affected, sometimes saves the sound leg from attack if he will stand quietly in the slings. But if the slings make him restless the disease is aggravated. As a rule it is best not to try and sling the animal, especially when both hind legs are paralyzed. The urine should be drawn off once or twice a day if possible.

Prevention: The important point is, that the disease can be prevented by cutting the grain ration to a minimum, and turning the horses out when they are idle for a few days.

Mild cases can be prevented from developing into severe and fatal ones by stopping the animal when the first sign of lameness appears, and not walking him until it disappears. This is important as 80 percent of cases die where both hind legs are paralyzed.

In some cases that recover the affected muscles waste away leaving the horse lame for a long time. In these cases a blister should be applied and the horse turned out to pasture, and the parts massaged daily after the blister has spent itself.

Wounds.—The main considerations in the treatment of wounds are (1) To stop the hemmorrhage if it is severe. This can be done by applying a cord, very tight, packing the wound with sterile gauze or tight bandaging. When the wound is in a position where a tourniquet (cord) can be applied, such as a leg, it should be placed above the wound if the blood is spurting and bright red. In this case it is an artery that is cut. When a vein is involved, the blood oozes out and is dark red in color. In this case it is sometimes necessary to apply the tourniquet below the wound as well as above; (2) The removal of any foreign body, splinters of wood, glass, etc.; (3) Prevention of infection. To accomplish this the following procedure is simple and useful: Cover the raw surface of the wound with gauze or absorbent cotton soaked in a mild antiseptic solution, to prevent contamination while shaving or clipping. Shave or clip the hair around the wound; remove debris from the raw surface, wash the wound with a warm antiseptic solution. For this purpose 1% solution of lysol or creolin is useful, or a normal saline solution (1 heaping teaspoonful of pure salt to a quart of warm water.) For a daily dressing tincture of iodine 2½% or mercurocrome 1 to 2% can be used, or, the new drug, sulphanilamide, can be applied to the raw surface of the wound.

With regard to suturing (stitching) the average wound does better not sutured. Suturing is necessary only if large areas of tissue are displaced or the wound is gaping badly.

Wounds of the Feet of Horses.—These wounds usually occur at the hoof-head from caulks and treads or from picked up nails through the sole or frog. They can be very serious, causing permanent deformities and even death.

Caulks and Treads: All wounds at the hoof-head should be taken seriously, even if the horse is not lame. First clip or shave off the hair, remove any broken horn, hair or other debris that is often driven into the wound by the caulk. Then apply tincture of iodine or strong creolin or lysol solution. If the horse becomes lame and infection occurs the whole of the hoof and pastern should be kept in a hot antiseptic bath or poultice for three or four hours a day. A small barrel sawn in two makes a good foot bath. If a poultice is used, bran is a suitable material. There is no virtue in the bran; it is merely a base to hold the antiseptic moisture. Mix the bran with boiling water to which has been added 2% of creolin (3 teaspoonfuls to 1 pint of water).

The wall of the hoof immediately below the wound should be rasped down very thin, to relieve the pressure and intense pain. Sometimes drainage can be made at this point, which is a great help and often prevents the development of a "quittor." If this condition develops, a cure is seldom possible without a drastic surgical operation.

Punctures of the Sole or Frog.—Before removing the nail it is wise to clean the sole and frog of the hoof thoroughly. Pull the nail out and pare a cup-like cavity around the point where the nail penetrated. Holding the horse's foot up, pour tincture of iodine

or other reliable antiseptic into the cup and allow it to soak into the track the nail has left. If the horse is lame treat as recommended for caulks at the hoof-head. In bad cases the horny frog will separate from the sensitive frog, the separation showing at the heels. In this case the point of entry of the nail should be enlarged, which makes better drainage and an antiseptic solution can be syringed through from the separation at the heel. When the new frog has grown a covering of horn, the old frog should be cut off.

If a qualified veterinary surgeon is available owners are strongly advised to call him, as these cases are often very serious.

Wounds and Inflammations of the Eye.—These need special consideration. The practice of blowing powdered alum or lime into the eye, as some people do, is cruel and often injurious. Injured eyes should be bathed with a solution of boric acid in boiled water, dissolving as much of the powder as the water will take up. Afterwards a few drops of a 10% solution of neo-silvol or argyrol should be dropped into the eye with a medicine dropper, three or four times a day. The animal should be kept in a darkened place.

With regard to the application of remedies to the wounds of animals in general, it is best, for humane reasons, to try them out on yourself first. Most animals are as sensitive to pain as ourselves.

When treating wounds in any animal, provision should always be made for good drainage, as pus formation nearly always occurs. There should be an opening at the lowest part of the wound. It is a good plan to boil the water used for making antiseptic solutions for the treatment of any wound.

INFECTIOUS DISEASES OF HORSES

Acute infectious diseases can take a heavy toll of livestock. The recent outbreaks of equine encephalomyelitis are examples.

Sub-acute or chronic infectious disease, though not as alarming as the acute forms make deep inroads into the economic returns of animal husbandry, from unthriftiness, if not from death. Some of these conditions are present for years without the owner being fully aware of their presence, not only in horses, but in all species of domestic animals and poultry.

Equine Encephalomyelitis.—All outbreaks can be prevented by vaccination as the vaccine is almost 100% efficient and the cost is moderate. The responsibility for the prevention of this disease rests squarely on the shoulders of the horse owner. The Animal Diseases Laboratory at the University produces and sells the vaccine. The fact that equine encephalomyelitis is communicable to humans is an added reason why it should be stamped out in horses. Several hundred cases have occurred during recent years in Saskatchewan amongst humans.

Swamp Fever.—(Infectious Anemia).—This disease still occurs in the newer settlements of the North. Research work done by the Animal Diseases Laboratory at the University proves that the disease can be prevented by avoiding swampy pastures and watering places. If slough water has to be used, it should be run through a pipe or conduit containing lime. There is no known specific cure, though many remedies are used. Mosquitoes and biting flies can transmit the disease from a sick horse to a healthy one. A horse with swamp fever can live for many years, in some cases, and be capable of spreading the disease to other horses during that time.

Influenza, Pink-eye, Pneumonia, Shipping Fever, which are allied diseases, have been rare. If outbreaks should occur vaccination of contact horses should be done, using influenza bacterin, and affected animals treated with influenza antiserum. These diseases spread very rapidly. Isolation and thorough disinfection should be carried out.

Distemper. (Strangles).—Whilst influenza-like diseases have been rare in recent years, this disease which is one of the group, has broken out occasionally. It is caused by a germ to which young horses are very susceptible. The symptoms are: loss of appetite, coughing, a thick, creamy discharge from the nostrils, depression, fever and, after a few days, hot painful swellings under the jaw or below the ear in most cases. These swellings form into abscesses and contain a thick, creamy pus. The lining of the nostrils is red and inflamed looking. The best first-aid treatment is to isolate the animal, blanket according to the season of the year, keeping the body warm and the air cool and fresh. Inhalations of medicated steam are useful. A tablespoonful of Friar's balsam or eucalyptus in half a pail of boiling water can be used. Then, arrange a sack, with the end cut open, around the nose, attach it to the halter with the other open end around the pail and let the horse breathe the medicated steam, being careful not to close off too much air. This can be done once or twice a day. Feeding the horse from the ground helps to drain the pus from the nasal chambers. Where abscess formation has occurred,

and the abscess has burst, the opening should be enlarged to provide good drainage. When the abscess does not break it needs to be opened. When further treatment is needed anti-distemper serum can be used. Penicillin and sulphanilamide are promising new treatments, but are in the experimental state as yet, and should be administered only under the supervision of a veterinary surgeon. In uncomplicated cases recovery takes place in two or three weeks. There is a very serious form of this disease known as Irregular Distemper. In these cases, the abscesses may form in any gland of the body instead of the glands around the jaws. When they are inaccessible not much can be done. Some cases of chronic colic are due to the remains of these abscesses in the glands of the abdominal cavity.

Prevention: This can be accomplished by isolation of affected horses, careful burning of contaminated bedding, discharges, etc., and disinfection of the mangers, stalls and other soiled objects. Anti-distemper serum is used for quick, temporary protection. Distemper bacterin is used for active, permanent prevention, but takes about ten days to become established. Recovered cases are usually immune for life.

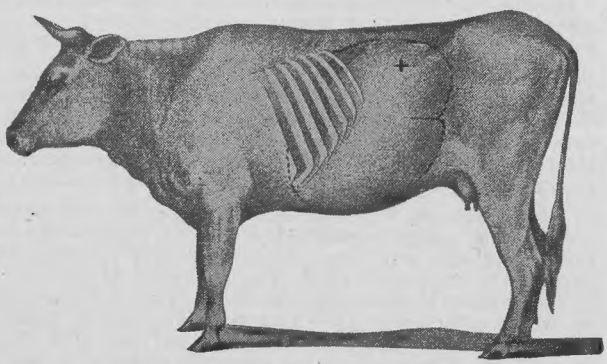
CATTLE

NON-INFECTIOUS DISEASES

Perhaps the commonest non-infectious conditions met with in cattle are "bloating," impaction of the first stomach and impaction of the third stomach. For impaction, the best general home treatment is to give 1 pint of mineral oil or 1 ½ pints of raw linseed oil daily. **Boiled linseed oil is poisonous.** In the case of "bloating" two table-spoonfuls of turpentine and 2 to 4 teaspoonfuls of creolin should be shaken up with the oil mentioned above. Where the tension is great and there is danger of the animal dying from suffocation and poisonous gas, the stomach should be "tapped" with a trocar and cannula. This is done on the *left* side at a place equal distances from the last rib, point of the hip and the side projections of the back-bone (see cuts). The cannula should be left in until gas ceases to form. The skin at the point of puncture should be shaved and swabbed with tincture of iodine or alcohol, or washed, and the instrument sterilized by boiling.

Impaction of the Third Stomach (Manyplies).—This impaction is sometimes very persistent and may take a week or more to correct. The food packed between the leaves at the top becomes very dry and hard. It is possible for the passages to be very watery from a dose of epsom salts and yet the impaction remains. The cause of this impaction is long continued feeding of dry feed and insufficient water. It is common in Saskatchewan during the late winter and early spring. Overfeeding of grain will also cause it. The symptoms are often vague, such as variable appetite, the cow does not chew its cud, grunting when lying down, constipation, partial or complete, dullness and a decreased milk flow in milking cows. The best home treatment is to give a full dose of the oils mentioned above, and then half doses two or three times a day. An occasional dose of epsom or glauber salts, 1 pound to 1 ½ pounds, in 2 quarts of warm water can be given. Plenty of water should be allowed if the animal will take it. Enemas of warm soapy water are indirectly helpful.

A trocar and cannula—the proper instrument with which "tapping" should be done.



+ indicates the approximate place where "tapping" should be done.

Most of these digestive troubles of cattle can be prevented by common sense feeding and watering practices. The important points are: the quality of the feed, the quantity, the time of feeding, watering, and care when changing feeds, to change gradually; this applies to pasture, grain and fodder.

Sterility in Cattle.—Judging by the letters received this condition is very prevalent in all parts of the Province. The letters usually state that the writer has difficulty in getting some of his cows in calf, and asking for a remedy to give the cows to help them to become settled. The trouble is not so simple as that, and there is no one treatment or remedy that is suitable for all cases.

The condition is so important to successful cattle breeding that an examination of the situation needs to be made to clarify the breeder's knowledge of the subject. The following brief summary is offered for this purpose:

Sterility in cows comes from many causes, some of which are obscure. The cause usually comes within one of three different categories.

1.—**A diseased condition of one or more of the organs of reproduction.** That is, the ovaries, tubes, uterus and vagina. Contagious abortion and retained afterbirth are often the cause of the trouble. It is necessary to make an examination of these organs in each cow before a diagnosis can be arrived at. Treatment of these cases in the cow has to be carried out by the qualified veterinary surgeon making the examination, who is necessary for the diagnosis and treatment of cases within this category. There are other obscure infections also that might be responsible for the diseased condition of the organs. An infectious venereal disease, known as trichomoniasis, has proved to be the cause of many cases recently.

2.—**The lack of certain hormones.** These hormones are internal secretions, formed in the animal's body by certain ductless glands. One of the functions of these secretions is to start and regulate the reproductive cycle. In some cases, these ductless glands fail to form the secretions, and sterility results. Treatment consists of injecting the missing hormones, hypodermically into the animal's body. Those commonly used are Dibestranol D.P., Di-ovocylin and Gonadin. They can be obtained at most drug stores. Instructions for giving them, and the dosage, come with the remedy. They are preparations put out by reliable commercial firms. There are several others under various trade names, just as reliable for sterility due to causes under this category.

3.—**Nutritional deficiency.** This cause sometimes operates after winter feeding in the stable. Also, when crops are fed that were harvested in a dry season. Vitamin "A", phosphorus, and calcium are usually the main deficiencies. Green grass, bright, sun-cured green hay, and legumes are rich in vitamin "A". Roughages, one-year old or more, are low in this vitamin. Bonemeal will supply supplemental phosphorus and calcium when these are the deficiencies; fish liver oils, supplemental vitamin "A" when this is the deficiency.

Sterility is a difficult problem, and usually needs careful study and treatment of the individual cow, by an experienced veterinary surgeon before it is overcome.

INFECTIOUS DISEASES OF CATTLE

Hemorrhagic septicemia, blackleg, coccidiosis and contagious abortion are the most common of the infectious diseases of cattle in the Province. Tuberculosis is present in some districts but there are areas where it has been stamped out.

Tuberculosis.—No attempt will be made to describe symptoms, as quite often none are present. The only practical way to make a diagnosis is by the tuberculin test. To have cattle tested for this disease, the services of a qualified veterinary surgeon are necessary. The cattle owner can employ a private practitioner to do the testing. The Health of Animals Division of the Dominion Department of Agriculture, Ottawa, does free testing under certain policies. (See services available, page 19).

Hemorrhagic Septicemia is caused by a specific germ known as Pasteurella bovisepticus, and should be handled by isolation of affected animals and vaccination of the rest of the herd with hemorrhagic septicemia bacterin, and the premises thoroughly cleaned and disinfected. Many other domestic and wild animals, also poultry, are subject to the disease. This disease may be divided into four types, with symptoms corresponding to the organs affected: (1) Pulmonary (lungs and air passages); (2) Intestinal (which is rare); (3) Cerebro-spinal (brain and spinal cord); (4) Cutaneous (skin and adjacent tissues). The symptoms are not always as clear-cut as this division would indicate, but often show more than one of the types. This point is of practical importance as the mixture of symptoms can be very misleading with very disturbing results. Coccidiosis

is still sometimes mistaken for the intestinal type of the disease. They are two entirely different diseases and until the animal parasite causing coccidiosis was discovered in the Province, most cases of coccidiosis were diagnosed as the intestinal form of hemorrhagic septicemia or dysentery, sometimes with fatal results as the treatment for coccidiosis is entirely different. This mistaken diagnosis still occurs.

Treatment of cattle affected with hemorrhagic septicemia is not very satisfactory. If the disease is recognized in the early stages, treatment with anti-hemorrhagic septicemia serum, in large doses, will sometimes stop the disease. One of the sulpha group of drugs is worth a trial.

Hemorrhagic Septicemia under the name of Shipping Fever has become a serious problem to shippers of cattle to market. To meet this problem, when shipping fever is prevalent, cattle should be vaccinated with two doses of hemorrhagic septicemia bacterin five to seven days apart: the last dose to be given at least ten days before shipment. Where this is not feasible, one dose given ten days before loading will give some protection. Losses from this disease can be reduced by avoiding undue exposure and excitement during transit, in conjunction with vaccination. Anti-hemorrhagic septicemia serum can be used to give immediate and short-term protection during shipping. One dose of 50 c.c. or more should protect for ten days. The total picture of shipping fever in cattle is not yet clear. Vaccination, using either the bacterin or the anti-serum has failed to protect in some cases. The reasons cannot be discussed here, the foregoing is the best that can be offered up to the present.

Coccidiosis is caused by a protozoan or animal parasite and affects mostly the linings of the small colon and rectum, destroying them in patches, leaving raw bleeding surfaces. The animal stands with arched back, strains a lot and passes bloody stools and pure blood, loses flesh rapidly and sometimes goes into convulsions. In dealing with the disease, it is best to send scrapings from the wall of the rectum to the Animal Diseases Laboratory at the University to confirm the diagnosis. They should be sent in a clean, small glass or other container. The treatment consists in giving one to two teaspoonfuls of thymol well shaken up in one or two pints of warm water daily. Affected animals should be kept isolated and the place thoroughly cleaned up and disinfected before healthy animals are allowed in the place. A bulletin on coccidiosis is available from the Animal Diseases Laboratory at the University.

Blackleg.—This disease is fairly well known and occurs in most parts of the Province. It can be definitely prevented by vaccinating all susceptible animals, especially those between the ages of three months and three years of age. Usually the first symptom noticed is that of finding one or more young cattle dead, showing crackling swellings on various parts of the body, except below the knees and hocks and on the tail. If seen alive, the animal stays alone; shows great distress; breathing is quick and labored; temperature is high; there is lameness in some cases; the typical swellings appear, which crackle when pressed with the fingers. The animal goes down in a state of coma and dies usually in from 12 to 48 hours from the start.

The disease is caused by a germ which produces gas, hence the crackling swellings.

Control and Vaccination.—Dead animals should by buried deep along with their discharges, and all contaminated material, such as bedding, grass and soil. Things that cannot be buried should be thoroughly disinfected. The carcass should not be skinned or even cut. There is no satisfactory treatment for the disease.

With the older types of vaccine, vaccination has to be done yearly until the calf reaches the age of three. There are some cattle men who still prefer this method, as it has given them satisfactory results over the years. Calves that have been vaccinated with these older types of vaccine before weaning or while still very young, should be vaccinated again before the blackleg season, or in the spring. However, there is a vaccine available now that gives life-long protection from one inoculation, according to the definite statement of the reliable commercial firm making the vaccine. In rare cases vaccination seems to fail to protect. In these cases the following may be the reasons: (1) Out-dated vaccine; (2) Vaccine that has been spoiled by exposure to a high temperature or that has been frozen. (Vaccines should be kept at a cool temperature all the time. Refrigerator temperature is the ideal for storage); (3) Other diseases mistaken for blackleg, particularly malignant edema. This disease is very much like blackleg and can be excusably confused with it where laboratory aid is not available. Blackleg vaccine will not protect against malignant edema. In districts where this disease has been definitely diagnosed, malignant edema vaccine should be used, as well as blackleg vaccine. There is a combined vaccine on the market now for the two diseases; (4) Some mishap while giving the dose, such as the needle going through the skin from the inside, or the vaccine going past a leaky plunger in the syringe, unobserved by the person

doing the vaccination. In these and similar cases the animal does not receive the dose The full amount of the dose should always be given. The exact dose is stated on the bottle of all makes.

To summarize the important points in blackleg control:

1.—Vaccinate all cattle up to three years of age.

2.—Calves vaccinated before weaning or while very young, should be vaccinated again before the blackleg season, or in the spring, unless a one-dose-life-immunity. vaccine is used.

3.—Use vaccine that is not out-dated and has not been exposed to extreme heat, or frozen.

4.—Bury dead animals and all contaminated material in a grave six feet deep, covering the carcass with a layer of quick lime before filling in. This depth and the quick lime lessen the chances of dogs and coyotes getting at the diseased carcass and spreading the germs around.

Contagious Abortion.—This disease is still very prevalent, especially in dairy cattle herds but is found in other herds too. The only control over it is that adopted by some towns, villages, hamlets, and municipalities, which demand that the dairyman delivering milk must have a blood-tested herd before granting him a license. The Provincial Government also offers an optional scheme for the control of the disease. Particulars of the scheme can be obtained from the Veterinary Division, Department of Agriculture, Regina. There is no satisfactory treatment, and owners are advised not to spend money on supposed cures. Many hundreds of thousands of dollars have been spent on these useless, supposed cures. In case of an outbreak owners are advised to consult a qualified veterinary surgeon, or if one is not available, to write to the Animal Diseases Laboratory at the University, or the Provincial Veterinarian, Department of Agriculture, at Regina. Loss of the calf is not the only bad result of the disease. It often leaves the cow sterile, and is a frequent cause of the cow not "cleaning" (retained placenta). The germ causing contagious abortion is sometimes found in the enlarged knees of cattle known as hygroma, and is a factor in producing the condition.

When a cow that is infected with contagious abortion calves or aborts, the germs migrate from the uterus to the udder in large numbers and are poured out with the milk. In drinking this milk, humans can be and sometimes are, infected with the disease. The disease is known as **undulant fever** in the human species. The Veterinary Science Department at the University has been able to diagnose a large number of cases in human beings. Cases are still being met with from all parts of the Province.

In connection with contagious abortion of cattle, the Provincial Department of Agriculture, in conjunction with the Animal Diseases Laboratory at the University, now offers assistance in a system of **calfhood vaccination** which has been proved to be effective. Details can be obtained from the Provincial Veterinarian, Department of Agriculture, Regina, or from the Animal Diseases Laboratory at the University.

Mastitis.—This disease is an inflammation of the udder. It may affect one or all quarters but most often one or two. It occurs in an acute and chronic form. It is often difficult to cure and in some cases partially or completely destroys the quarter. The chronic form is the more common.

Cause: Mastitis is caused by an infection; the germ most often found causing it is a streptococcus, although several other germs are responsible in some cases. Injury from any cause predisposes toward it, giving the germs a chance to become active and bring on an attack. The causative germs are often lying dormant in the udder, doing no visible harm until the exciting cause operates. In most cases the infection gains entrance through the teat canal. It can be carried on the hands of the milker from a previous case, or by a milking tube that has not been sterilized. Mastitis sometimes develops after injecting the udder in cases of milk fever.

Symptoms: These usually appear at the time of freshening, but can appear at any time. In the acute type, the affected quarter is red, enlarged and sore to touch. The cow moves with a stiff straddling gait. Milk secretion is lessened. The milk may be watery, straw-colored, with yellowish clots and sometimes streaked with blood. The cow shows signs of being sick with a poor appetite, general depression and fever.

In the chronic type, the symptoms are not so plain, and it is not easy to diagnose in many cases without a bacteriological examination of the milk. There may be small hardened areas in the quarter and occasionally the milk contains flakes and signs of blood. In some cases this shows up only in the separator after the milk has been separ-

ated. As a rule there is no systemic sickness. To make a diagnosis of this type it is necessary, first, to locate the affected quarter. This can be done by comparing the suspected quarter with the healthy one as to size, firmness, weight. If one quarter is soft and pliable and the other smaller or larger, hard, or with hardened areas, the chances are that the latter is the diseased quarter. Another method to detect the diseased quarter is by using the strip cup test; this can be done by the owner himself. A few streams of milk are drawn into a cup, covered with a fine wire screen or black cloth. Any flakes in the milk show up plainly on the screen. Two other tests are available. The bromthymol test and the Hotis test, but these need special training to conduct accurately.

The following instructions should be carefully carried out when drawing milk for bacteriological examination at the laboratory.

1.—A six or eight ounce bottle and cork should be boiled for at least 30 minutes and allowed to cool in the water before using.

2.—The part of the cork that is going into the bottle should not be touched.

3.—The teats should be cleansed with rubbing alcohol, especially around the opening.

4.—An equal amount of milk should be drawn from each quarter and drawn directly into the bottle. Each sample should be marked as to which cow it came from.

5.—Each sample should be wrapped in a damp cloth, then in heavy wrapping paper and should be mailed immediately to the Veterinary Science Department, University of Saskatchewan, Saskatoon.

6.—The name and address of the sender should appear on the parcel.

7.—The sample should not be mailed at the end of the week or it may remain in the Post Office over Sunday.

Milk from a quarter that is affected with mastitis is not safe for human use. If it has to be used it should be brought to a near boil for thirty minutes.

Treatment: In the acute type, where the owner has to do his own treatment, he should foment the quarter with very hot water for half an hour several times a day, then massage it gently with warm olive oil from above downwards. The milk should be stripped out every few hours into a can containing a strong solution of creolin or formalin, or into a suitable paper bag and burned. In no case should it be milked onto the standing, as it might infect other quarters. A physic of one pound of epsom salts or glauber salts in two quarts of warm water is sometimes necessary.

In the chronic type, the above treatment can be used but is not as necessary, as the inflammation is not very active.

In the last year or two, every extensive research work has developed the treatment of direct injection into the udder of various new preparations which give very promising results and are worth trying. At present penicillin is the most favored. A qualified veterinary surgeon should be employed to do the work whenever possible as special instruments are needed and rigid sterility is necessary.

Both acute and chronic types of the disease can be treated with some of these new preparations.

In acute cases and in chronic cases that have flared up, a heavy protein diet should be avoided.

There are vaccines made for the treatment of mastitis, but they are of uncertain value. Treatment with vaccines gives better results if an autogenous vaccine is used. An autogenous vaccine is made from the individual case or herd to be treated. Instructions for the preparation of this kind of vaccine can be obtained from the Animal Diseases Laboratory, University of Saskatchewan.

Prevention: Sanitary measures are of the greatest importance. The infection can be carried on the hands of the milker, by the careless use of milking tubes, or from the standing which has been contaminated by stripping the milk from an affected quarter onto it.

Affected animals should be placed at the end of the milking line and milked last, the diseased quarter last of all.

If a milking tube is being used, it should be sterilized by boiling for half an hour before it is used. Many cases of mastitis are spread by neglecting this precaution.

A milking machine should not be used on a cow that has the disease in either the chronic or acute form.

The standings which have been occupied by affected cows should be thoroughly disinfected by scrubbing with a solution of lye, 1 pound to 20 gallons of water. Lime should be sprinkled on the standing. Ample bedding should be provided, especially on cement standings. A high producing udder lying on cold, sometimes frozen cement, runs the risk of serious damage which predisposes to an attack. The udders and teats should be sponged off with a suitable chlorine or other solution before milking. The hands of the milker should be washed with soap and warm water after milking each cow. The strip cup test should be used periodically to detect slightly active cases as they may flare up when predisposing factors operate. Such cases are placed at the end of the milking line, with the definitely diagnosed cases. Where there is much hard tissue throughout the udder it is usually best to fatten the animal for beef, both for economic reasons and as a measure of precaution. It is realized that these preventive measures cannot always be carried out, except in the specialized dairy herd, but it is sound practice to adopt them as nearly as possible, as a preventive measure in the non-specialized herds as well.

Prevention by vaccination in a herd in which the disease is spreading may be tried, using the autogenous vaccine mentioned above, in conjunction with the sanitary measures outlined.

Where success is achieved in treatment by the injection of the newer remedies into the udder, the main source of infection has been eliminated, as bacteriological examination of the milk in these cured cases shows that the bacteria have been destroyed. This is an important preventative measure in the control of the disease, as well as a curative one in the individual cow.

A cow that has been cured of mastitis either with penicillin or one of the sulpha or other drugs, is not protected against a re-infection.

Lump-jaw (Actinomycosis and Actinobacillosis).—The enlargements that occur around the jaws, throat, or tongue of cattle are usually due to an infection. This infection is caused by three different types of organisms. The enlargements go under the common names of "lump-jaw" and "wooden tongue." Lump-jaw is infectious to other cattle and to man also.

One type of enlargement, which affects the bone is caused by a fungus known as Actinomyces bovis (Ray fungus). The enlargement is hard, like bone, and immovable.

Treatment of this kind of "lump-jaw" is unsatisfactory. The animal should be fattened for beef early.

A second type of tumor may affect the glands, tongue or soft tissues. This kind is caused by a different fungus known as Actinobacillus lignieresi. The growth is not on the bone in this case, and the enlargement is movable. The best treatment of this type is to have the growth dissected out by a qualified veterinary surgeon. Where this is not possible, some cases can be cured by the following treatment:

Give one to two teaspoonfuls of iodide of potash twice a day until the animal shows signs of being saturated with the drug. This shows up by the animal going off its feed, running at the eyes, and a scurfy skin. The medicine should then be discontinued for a week and the treatment repeated. If no improvement appears in six weeks, the treatment should be stopped.

Where a veterinary surgeon is available, it is more satisfactory to employ him. Some cases can be successfully treated by injection of the medicine directly into the blood stream.

Cows heavy in calf should not be treated. Some of the drug passes out with the milk and the milk flow is decreased. Long continued feeding of iodine occasionally makes an animal sterile.

The third kind of enlargement is an ordinary abscess, caused by a mixed infection of various pus-producing germs. Treatment consists of opening the abscess, letting the contents out and then swabbing the cavity with tincture of iodine. This type is not the true "lump-jaw."

In cases where the enlargement is discharging, the animal should be isolated and the discharges burned or mixed with a strong solution of creolin or formalin.

Meat and Milk in Lump-jaw.—It is not possible to give a definite yes or no as to the meat being fit for human use, without being able to examine the carcass and in-

ternal organs at the time of slaughter. However, if the disease is confined to the region of the jaw, throat or head, and the tumors not large or numerous, with no signs of them in the rest of the carcass and internal organs; also, if the animal is in good condition and not debilitated, the meat may be fit to use. If there is any doubt, and the meat is being used, it should be thoroughly cooked.

The above must not be taken to mean that these suggestions put the stamp of approval on the meat for human use. They are the best that can be offered where an inspection cannot be carried out by a qualified inspector.

In all cases, the whole of the head should be discarded.

The milk is considered fit for use if the tumor is small, confined to the region of the jaw and not discharging; and the animal in good condition, with no tumors in the udder.

Scours in Calves.—Scours in calves occurs in two main forms. (1) Simple scours: From too much milk, dirty feeding utensils, or eating coarse hay or bedding, causing an indigestion. This form is not so serious and the calf usually recovers when the cause is removed. Treatment, when needed, consists of giving 2 to 4 ounces of castor oil with 5 to 10 drops of pure creolin well shaken up in it, daily. Mineral oil, olive oil, or raw linseed oil can be used in place of castor oil. Strong coffee and raw eggs can be used if the calf is weak. Two to six ounces of lime water, mixed with the milk at each feeding, or alone, several times a day is useful; (2) White Scours of Calves: This is a more serious condition and sometimes follows simple scours.

White scours in calves is an infection of the newborn calf during the first few days of life, though older calves can become infected. There is a generalized infection, and, though scours and great debility are the main symptoms, other symptoms may be present, corresponding to the organ involved. Pneumonia is often present and in some cases nervous symptoms, such as convulsions, coma, and paralysis.

It is caused by infection with various germs, which gain entrance to the body with the milk, food, or water, also through the navel cord. It is more likely to develop in calves born in the stable. Once it has gained entrance to a stable it is difficult to control. It occurs more often in calves that do not get the first milk of the dam (colostrum).

To control the disease strict sanitation and isolation are necessary. The calf should get the first milk of the cow for five days. The colostral milk contains substances essential for the calf, if the dam is in a proper state of nutrition. The stumps of the navel cord should be soaked with tincture of iodine at birth.

Treatment is very often unsuccessful. Anti-calf scour serum is used both for treatment and as a preventative, but results are variable. Olive oil, mineral oil, or castor oil, 2 to 4 ounces, with 5 to 10 drops of pure creolin shaken up in it may be given twice a day. A rectal enema of warm normal saline solution (a heaping teaspoonful of pure salt to one quart of water) is helpful, given daily. Strong coffee and raw eggs are useful. Two to six ounces of lime water mixed with the milk, or alone, several times a day, helps.

Two recent new methods of prevention and cure are promising. One, a combination of several vitamins put up expressly for the prevention and cure of scours in calves, which can be obtained from drug stores. Dosage and instructions come with the remedy. The second is either of two sulpha drugs, sulphaguanidine and sulphathalidine. As these are potent drugs the dose has to be given carefully, according to body weight. and the druggist requires a doctor's prescription to dispense them. They should be given only under the supervision of a veterinary surgeon.

Keratitis.—Pink-eye (Keratitis) of cattle is an infectious disease affecting the eyes. It seems to be slowly spreading in the Province. In severe cases there are constitutional symptoms as well—fever, loss of appetite, reduced milk secretion and loss of flesh. The inflammation of the eye sometimes results in total blindness. It is more common in summer than winter. Both young and older animals are susceptible. As a rule, it does not spread rapidly from animal to animal but breaks out here and there. The disease is seldom fatal but the animal does not thrive, due in part to the disease, and also to the difficulty in finding the food when the eyesight is lost. In the latter case, the animal walks into obstacles due to the blindness.

The disease is caused by bacteria, and possibly a virus, gaining entrance into the eye; injuries to the front of the eye (cornea) from dust, insects, twigs, stubble, etc., favor the entrance of the infection.

Treatment, to be successful in saving the eye, should be started early. Keep the animals in a dark place if possible. Accumulations of discharge and dirt should be

washed off with a solution of boracic acid and clean warm water, using as much of the boracic acid as the water will dissolve and a soft clean cloth. Then a 5% sulphathiazole ointment can be applied to the eye. There is a vaccine put up for this disease, but results from its use vary.

Affected cattle should be isolated as the disease is infectious.

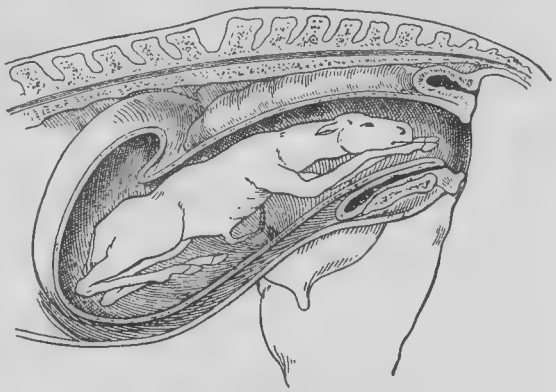
WARBLE FLIES

Warble fly control should receive attention, and if properly undertaken, can be very effective. It is quite accepted that the losses from these parasites are tremendous each year, in fact, western hides are always sold at a marked discount because of the presence of warble grub holes or scar tissue. On the eastern market all western hides are now considered as grubby and quite unsuitable for the making of high priced leather goods. Warble grubs can be controlled if a community effort is made and the backs of animals treated with derris root powder before the grubs have emerged. The treatment is simple, cheap, and one which the farmer can apply himself but, as already mentioned, a community effort is absolutely essential. A bulletin on Warble Flies is available from the Animal Diseases Laboratory.

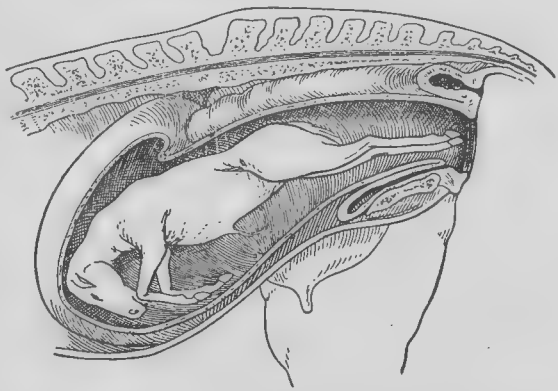
FOALING AND CALVING

The physiological act of birth in animals comes under the heading of Veterinary Obstetrics. The actual act itself is known as parturition. To be successful, the stockman must have an accurate knowledge of the process of the act, so as to recognize abnormal conditions promptly.

Parturition in the Mare.—Normal foaling is usually a rapid process. If there is much delay for any reason, the colt often dies. There are two normal presentations (1) anterior; (2) posterior. In the anterior presentation the front legs are presented, with the nose of the foal even with and resting between the knees. In the posterior presentation, the hind legs come first, with the tail lying flat between the buttocks. In both presentations the spine of the foal must be uppermost, and in a direct line with the spine of the dam above (see illustrations).



Normal anterior presentation.



Normal posterior presentation.

The **anterior presentation** is by far the most common, so much so, that some stockmen who have never seen a posterior presentation have attempted to turn the colt thinking it was coming the wrong way. This is no easy operation to do, and, in unskilled hands has sometimes proved fatal to both mare and colt.

When the colt is coming backwards (posterior presentation) the birth is a little harder on the mare; it is also necessary in this presentation that the colt should not be allowed to remain for very long, part way out, stuck in the passage, as there is danger of its being suffocated under certain conditions.

It is important to know how soon to apply traction, if the birth is not progressing, in either of the normal presentations. Having made sure that the presentation is normal (as shown in the cuts), and repeated labor pains do not advance the birth, traction should be applied by pulling on each leg evenly, and in the case of an anterior presentation on the head also. The pulling should be done at the time the mare is having labor pains (straining). The direction of the pull should be slightly downwards, not straight out. Applied in the above manner, considerable traction can be safely used, to gradually complete the birth.

There is one condition in a normal presentation where the above remarks about traction need to be modified. That is, where the pelvic girdle of the mare is small and/or the colt is very large. In some of these cases no amount of pulling will advance the birth, and if it is continued, death of both the dam and colt often results. The shoulders or hips of the foal are too large to pass through the bony pelvic girdle, every fraction of space in the birth channel being occupied. In these cases the delivery can be affected by forcing one leg back and pulling on the other; this lets one shoulder or hip, as the case may be, slip past the rigid bony ring of the pelvis. When this has been done the other leg is pulled even with its fellow. Even traction is then applied to both legs, and to the head also in the case of an anterior presentation, and the delivery completed.

Retained Placenta.—If the afterbirth has not been passed in 12 hours it should be taken away. It is risky to leave it much longer in the mare.

Care of the New-born Foal.—The first consideration is to see that the foal starts to breathe. Until its advent into the world the offspring has never taken a breath, having obtained its air from the dam through the vessels of the navel cord, consequently the lungs have never been dilated. Usually respiration starts itself. When it does not, the reason is sometimes due to an obstruction of the air passages by mucus, a part of the afterbirth, a blood clot, or fluid. These should be removed from the nostrils at once. If respiration still does not start one nostril should be closed, whilst blowing strongly into the other through a funnel made by the hand. Artificial respiration should also be started and kept up. The tongue, too, should be drawn forward to make sure that it is not obstructing the air passage. As long as the heart beats there is a chance that respiration can be established. If fluid has gained entrance into the lungs of the colt, it should be held upside down by the hind legs, to let the fluid drain out.

The **treatment of the navel cord** in the foal is very important. If it has not ruptured it should be cut 2½ to 3 inches from the colt's body. The moisture in the stump should be gently squeezed out, and the stump itself soaked in tincture of iodine. If bleeding occurs, it should be stopped by pinching the end of the cord for a few minutes, when it usually stops. If it does not, it thould be tied with a piece of string or tape. The navel cord is better not tied, unless it is necessary to stop the bleeding. When handling the cord, the hands should be scrubbed and the knife and string sterilized by boiling, as it is from infection, which gains entrance through the cord, that the fatal disease of joint-ill occurs. The cord should be dried up as soon as possible, by soaking it in tincture of iodine several times a day.

Constipation in the Foal.—Another important consideration in the care of the new-born foal is to make sure that the bowels start to function. Before the colt is born a certain amount of material accumulates in the gut, known as the meconium. It is not waste from the food but consists of mucus, bile and cells that have been shed from the lining of the bowels. It is dark in color and sometimes hard and dry, in which case a troublesome constipation results.

The passages should be carefully watched to see that these dark colored stools come away, which usually occurs in the first day or two, when the passages become yellowish in color, indicating that the pre-birth material has been passed. Failure to pass this material produces constipation, the symptoms of which are, in severe cases, straining, slight colicky pains, quick breathing and a disinclination to nurse. Even if these symptoms do not appear and the dark material has not been passed, treatment should be started. Give the colt two to four ounces of castor oil, or mineral, olive, or raw linseed oil, once or twice a day until the light colored stools appear. Rectal injections of warm soapy water or one of the oils mentioned are helpful. In some cases, the fecal matter has to be removed with the finger from time to time until all the material has come away. Care should be used in giving an enema or taking the mass out with one's finger, not to damage the anus or rectum of the colt, which are very small and tender.

Diarrhoea in the Foal.—The causes of this condition are varied: too laxative feed of the dam, too much milk, allowing the colt to nurse when the mare is hot and tired on coming in from work. In some cases it is due to the colt eating dirty bedding. Often

the colt will develop diarrhoea about the ninth day of age, the mare being in estrum (heat) at this time. When due to the last cause the diarrhoea usually stops without any treatment. When due to the forementioned causes, by correcting them, the condition usually stops without further treatment.

When medicinal treatment is needed the following can be given. Mix:

Castor oil, 2 to 4 ounces.

Pure Creolin, 5 to 10 drops, well shaken up.

The dose should be regulated within the amounts mentioned according to the age and size of the colt.

Joint-ill in Foals.—This is known also as **navel-ill.** It accounts for many deaths in foals and is a serious problem to horse raisers in all countries. The disease is due to mixed infection of the navel cord at the time of birth. This infection passes up the blood vessels and is spread throughout the body and has a tendency to locate in the joints, though the abscesses may form in any part of the body. In an occasional case infection occurs before the colt is born. The symptoms are lameness, swelling of one or more joints, quick breathing, an appearance of distress and suffering. The mare's udder becomes swollen due to the colt not nursing freely. In milder cases the swelling of the joints is the only symptom, and the inexperienced owner usually thinks that the mare has stepped on the colt. Some cases, but not all, show a swelling around the navel with abscess formation, in others the skin in this region is constantly wet and when the colt urinates the urine runs from the navel.

Treatment: As yet, no treatment is entirely satisfactory. In cases where the infection is mostly due to a streptococcus, marked improvement takes place from the administration of sulphanilamide but the rest of the infection, which is due to other bacteria, is not influenced by this drug. Penicillin may help in some cases. Navel-ill antiserum may be given and will cure in some cases if given very early in the disease; it is far from perfect but is the best available at present.

Transfusion of some of the mare's blood into the colt has cured some cases and is increasing in favor at present.

Prevention: Some success has been achieved by vaccinating the mare. Three doses are usually given several weeks apart, the last one early in the last month of pregnancy. On known infected premises both mare and foal should be vaccinated using navel-ill bacterin. Transfusion of some of the mare's blood into the colt can be used as a preventative also. Of course, this requires the services of a qualified veterinary surgeon.

It has been found that, by paying attention to the health of the mare and stallion, that is, seeing that they are free from disease at the time of breeding, the number of cases of navel-ill have been greatly reduced.

As most cases occur from infection of the cord at the time of birth or soon afterwards, careful antiseptic precautions should be taken at this time, both with regard to the handling of the cord and the surroundings the mare and foal are in. The place in which the mare foals should be perfectly clean. After the mare has foaled and "cleaned," it is good hygiene to wash the external genitals and the legs below, also the udder if it has become soiled, and move the mare and foal to another prepared, clean stall.

For instructions on handling the cord, to try and prevent this disease, the reader is referred to the section on Care of the New-born Foal.

Parturition in the Cow.—Calving is usually a slower process than foaling. A cow can be in labor for a day or two and still give birth to a live calf, although, if there is a long delay, it is wise to make sure everything is normal. If it is, one can wait longer, safely, before applying traction than in the mare. The normal presentations in the cow are the same as in the mare (see illustrations) and the same general instructions on the management of the delivery apply.

It has not been the custom to treat the navel cord of the calf, but recent findings indicate that some obscure and serious diseases are due to an infection of the navel cord at birth. The cord should be treated with tincture of iodine as in the colt.

It is important that the calf gets the first milk (colostrum) of the cow, for five days after birth. The colostral milk contains substances essential for the calf, if the dam is in a proper state of nutrition.

Retained Placenta.—When the cow does not pass the after birth it should be removed after 48 hours in most cases.

Milk Fever (*Parturient Hypocalcemia*).—This disease occurs in cows soon after calving. It occurs in the cow in the prime of life and condition, between the ages of five to eight years, though it can occur before and after these ages. Most cases develop during the first three days after freshening. In rare cases it appears before freshening and long afterwards.

Cause: It is caused by a temporary calcium shortage in the blood. The blood calcium level is fairly constant; when it falls below this level startling symptoms develop very quickly. In milk fever, this shortage in the blood is brought about by the sudden withdrawal of calcium from the blood into the colostrum and first milkings. Half a gallon of the colostrol milk contains as much calcium as exists in the blood at any one time. In a cow with milk fever, this sudden draught of calcium from the blood into the milk, is not made up, and the symptoms develop. Why it should affect some heavy milking cows and not others, it is not known. All that can be said is that the blood calcium control mechanism fails in cases of milk fever.

Symptoms: The cow is depressed, off her feed, sleepy, uncertain in her movements the hind quarters are partly paralyzed. In some cases there is exitement at first. Later the cow goes down and cannot get up. She loses consciousness; the neck is twisted and in many cases the head is drawn to one side with the nose against the body. Sometimes the cow is found down, unable to rise, and in a state of coma, stretched out full length. The eyes have a dull expression, the pupils dilated, and can be touched with the finger without making her wink. The tail is slack and the skin can be pricked without making her flinch. In an occasional case there is exitement and over sensitiveness, but the usual picture is one of unconsciousness and paralysis with all bodily functions suppressed.

Treatment: First, if the cow is stretched out full length, she should be propped up on her breast. This is important as it avoids a possible case of pneumonia. If a qualified veterinary surgeon is available, call him promptly. Do not attempt to give any medicine by the mouth, especially liquids, to a cow suffering with milk fever. Oil is particularly dangerous. The medicine is liable to reach the lungs, due to the throat being paralyzed, and cause pneumonia.

There are two methods of treatment, one by injecting 250 c.c. to 500 c.c. of a 20% calcium gluconate solution into the blood stream, or subcutaneously at several points. The other by inflating the udder with filtered air.

Where professional aid is not available, the latter method is the best for the layman to attempt. If he has not a milk fever outfit, he will have to improvise with a bicycle pump, and a piece of rubber tubing attached to a milking tube. The rubber tubing and milking tube should be sterilized by boiling for thirty minutes. The cow is laid on her side, the teats are washed with soap and water and then dried. The end of the teat around the opening is treated with alcohol or mild tincture of iodine. A clean towel is laid under the udder. The sterile milking tube is inserted into the teat, being careful not to let it touch anything before insertion. The quarter is then pumped full of air until it is very tense, care being taken not to make it too tense, as this might endanger the quarter. It is possible to overdo it when using a bicycle pump. When the desired tenseness is reached the teat is tied with a soft piece of bandage or rag to prevent the air from leaking out. All four quarters are treated in the same manner. The ligatures on the teats should not be left on more than five hours. If the cow recovers consciousness and gets up earlier, they should be taken off in three hours. The recovery is usually quite dramatic, the animal showing signs of recovery in one hour. If necessary the treatment can be repeated after eight hours. This method done with improvised instruments is crude and dangerous and should be attempted by a layman only in an emergency. Mastitis sometimes develops after this treatment. There is less danger of this occurring if the treatment is done by a qualified veterinary surgeon.

Cases left untreated usually die. The earlier treatment is commenced, the better the chances of recovery are. In cases treated during the first few hours of sickness, the recoveries are over 90%. In cases that die there is usually a complication with some other disease.

Prevention: In cows known to be subject to the disease, the attack can sometimes be prevented by not milking the cow dry, during the first three days, or more if necessary, after calving. There is some danger, however, that this practice may bring on a case of mastitis.

The injection into the blood stream or under the skin at several points of 100 c.c. of a 20% solution of calcium gluconate right after calving, another 100 c.c. the next day and 50 c.c. the following day, is recommended as a preventative, or the whole 250

c.c. may be given at one dose right after calving and repeated in 24 hours. The remedy can be purchased at most drug stores, sterile and ready to use.

The syringe and needle used should be sterilized by boiling for 30 minutes and the skin at the points of injection shaved and swabbed with tincture of iodine.

If a veterinary surgeon is available he should be employed to do the injections as strict sterility is necessary.

The dose is large in volume and should be injected at 5 or 6 separate points.

LIST OF USEFUL DRUGS AND REMEDIES FOR FIRST AID USE ON THE FARM

Doses for a Horse or Cow

As a rule cattle take a larger dose than horses.

Creolin (diluted in oil)	2 to 6 teaspoonfuls
Castor oil (colts and calves)	4 to 8 tablespoonfuls
Epsom salts (cattle)	½ to 2 pounds
Glauber salts (cattle)	½ to 2 pounds
Sweet spirits of nitre	2 to 4 tablespoonfuls
Sulphuric ether	2 to 4 tablespoonfuls
Nitrate of potash	1 to 4 teaspoonfuls
Sodium bicarbonate	1 to 8 tablespoonfuls
Potassium chlorate	1 to 3 teaspoonfuls
Powdered ginger	2 to 8 teaspoonfuls
Iodide of potash	1 to 2 teaspoonfuls
Powdered nux vomica	½ to 2 teaspoonfuls
Quinine	½ to 2 teaspoonfuls
Turpentine	1 to 4 tablespoonfuls
Chalk	1 to 8 tablespoonfuls
Iron sulphate (Piglets 4-5 grains)	1 to 2 teaspoonfuls
Reduced iron (Piglets 4-5 grains)	1 to 2 teaspoonfuls

COMMON HOUSEHOLD UTENSILS FOR MEASURING

1 teaspoonful=1 drachm=⅛ ounce.
1 dessertspoonful=2 drachms=¼ ounce.
1 tablespoonful=4 drachms=½ ounce.
1 wineglassful=2 ounces.
1 waterglassful=8 to 10 ounces.
1 teacupful=5 to 7 ounces.
Household utensils vary very much in size.
The above table represents the smaller sizes.

WEIGHTS AND MEASURES

Avoirdupois Weights

1 grain.
1 drachm=27.34375 grains.
1 ounce=16 drachms=437.5 grains.
1 pound=16 ounces=256 drachms=7000 grains.

Apothecaries' Weights

1 grain.
1 scruple=20 grains.
1 drachm=3 scruples=60 grains.
1 ounce=8 drachms=480 grains.
1 pound=12 ounces=5760 grains.

Liquid Measure

1 minum (drop).
1 fluid drachm=60 minums.
1 fluid ounce=8 fluid drachms
1 pint=20 fluid ounces.
1 quart=2 pints.
1 gallon=4 quarts.

TABLE FOR MAKING PERCENTAGE SOLUTIONS

The amounts are only approximate, but exact enough for practical purposes.

1 dessertspoonful in 1 pint=1%=1 part to 100 parts.

1 tablespoonful in 1 pint=2½%=1 part to 40 parts.

2 tablespoonfuls in 1 pint=5%=1 part to 20 parts.

4 tablespoonfuls in 1 pint=10%=1 part to 10 parts.

APPROXIMATE EQUIVALENTS OF THE METRIC TO THE IMPERIAL SYSTEM

Weights

0.065 gram= 1grain.
1 gram=15½ grains.
4 grams=1 drachm.
28.5 grams=1 ounce (avoirdupois).
30 grams=1 ounce (apothecary).
1 kilogram=2 pounds 3½ ounces.

Liquid Measure

0.06 cubic centimetre=1 minum (drop).
1 cubic centimetre (symbol c.c.)=17 minums.
3.5 cubic centimetres=1 fluid drachm.
28.5 cubic centimetres=1 fluid ounce.
85 cubic centimetres=3 fluid ounces.
225 cubic centimetres=8 fluid ounces.
340 cubic centimetres=12 fluid ounces.
460 cubic centimetres=16 fluid ounces.
568 cubic centimetres=1 pint.
1 litre=1000 cubic centimetres=1 pint and 15 fluid ounces.

The c.c. (cubic centimetre) is also known as the M.L. (Millilitre).

Vaccines, Bacterins, Antisera.—Where a veterinary surgeon is not available the following biological products should be on hand or quickly obtainable:

Equine Encephalomyelitis Vaccine and Antiserum. Hemorrhagic Septicemia Bacterin for cattle, swine, sheep and poultry. Blackleg Vaccine for cattle. Navel-ill Bacterin for colts. These products are given hypodermically. A hypodermic syringe and needles are necessary. a 10 c.c. syringe is the most useful size. The syringe and needles should be sterilized by boiling for 30 minutes. The site of injection, on the neck half-way between the head and shoulder, should be shaved or clipped and the skin swabbed with tincture of iodine or alcohol.

SERVICES AVAILABLE

HEALTH OF ANIMALS DIVISION, DOMINION DEPARTMENT OF AGRICULTURE, OTTAWA

Saskatchewan Offices:
Post Office Building, Regina: Federal Building, Saskatoon

The Health of Animals Division is responsible for the enforcement of the Animal Contagious Diseases Act, the Meat and Canned Foods Act and the regulations and orders made under these Acts.

Contagious Diseases.—Outbreaks or suspected cases of diseases such as mange in horses and cattle, sheep scab, hog cholera, glanders, etc., are investigated and dealt with.

Bovine Tuberculosis.—This disease is dealt with under three main policies, viz., "Accredited Herd Plan," "Restricted Area Plan," and "Supervised Herd Plan." The Accredited Herd Plan is for the assistance of purebred breeders. The Restricted Area Plan is the policy under which all cattle within a rural municipality, or group of municipalities, are tested. The Supervised Herd Plan is for the assistance of the farmer with an ordinary grade herd.

Bang's Disease (Contagious Abortion).—A limited amount of assistance in controlling and eradicating this disease is available to herd owners in a position to comply with the terms of an agreement under which the service is offered.

Inspection Service.—Any necessary testing and inspection of all classes of livestock is made of shipments intended for export to foreign countries and, where required, inter-provincial consignments.

The Meat and Canned Foods Act.—A meat inspection service is offered under this Act. Five packing plants in Saskatchewan are already under inspection.

PROVINCIAL VETERINARY SERVICES, DEPARTMENT OF AGRICULTURE, REGINA, SASK.

The following services are provided by the Veterinary Division, Legislative Building, Regina.

1.—Will answer correspondence relating to diseases of animals.

2.—Will assist in investigating outbreaks of disease in animals in districts not served by a graduate veterinarian.

3.—Will give advice regarding the diagnosis, treatment and control of contagious diseases and animal parasites.

4.—Will give limited assistance in the testing for contagious abortion of cattle which are the source of milk supply for towns or villages.

5.—Will give assistance in the vaccination of calves for the prevention of contagious abortion under a plan of supervised calfhood vaccination.

6.—Will assist in procuring vaccines, used for the prevention of sore mouth in sheep, fowl pox and laryngotracheitis in poultry.

7.—Will assist in improving veterinary services in rural areas by bonusing veterinarians under the Veterinary Services Act.

8.—A new Bang's Disease Testing Policy.

VETERINARY LABORATORY
University of Saskatchewan, Saskatoon

The services rendered at the Veterinary Laboratory, University of Saskatchewan, include the diagnosis of infectious diseases through the examination of suitable specimens, such as:

1.—Blood samples and organs from animals which have died from bacterial infections.

2.—The examination of milk samples for the recognition of udder diseases, and to determine if the milk is fit for human consumption.

3.—The recognition of parasites, internal and external.

4.—The testing of blood samples for contagious abortion of cattle.

5.—Post-mortems on pigs, sheep and poultry to determine the nature of the disease from which they may have been suffering.

6.—The production and sale of bacterins for equine distemper; autogenous bacterins for garget in cattle; swine plague bacterin; anti-swine erysipelas serum.

7.—The production and sale of equine encephalomyelitis vaccine and anti-serum.

8.—Making, and issuing, to authorized persons, the vaccine for calfhood vaccination in contagious abortion.

Printed November, 1943.
Third Printing, May, 1948